

What is claimed is:

1. A vaccine comprising (i) a gene construct or a polynucleotide encoding a member of the IRF family, wherein the expression of the IRF family member can be activated, and (ii) one or more genes encoding polypeptides selected from the group consisting of viral, bacterial, fungal, and parasitic peptides or one or more antigen-encoding genes derived from tumor cells, for the treatment, prevention, protective treatment and/or prophylactic immunization against tumoral, infectious and/or immune diseases.  
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2. The vaccine of claim 1, wherein the member of the IRF family is selected from the group consisting of wild-type IRF-1, synthetic IRF-1, immunologically active IRF-1 variants, wild-type members of the IRF family other than IRF-1, synthetic members of the IRF family other than IRF-1, immunologically active variants of a member of the IRF family other than IRF-1, and fusion proteins thereof.  
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3. The vaccine of claim 1 for the treatment of mammals.
4. The vaccine of claim 1 for the treatment of humans.  
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5. The vaccine of claim 1, wherein the gene construct encodes a fusion protein comprising a member of the IRF family as one domain of the fusion protein and a foreign protein as another domain of the fusion protein, wherein the activity of the fusion protein can be switched on and off by chemical or physical means.  
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6. The vaccine of claim 1, wherein the gene construct encodes an IRF-1/hER fusion protein, wherein the activity of the fusion protein can be regulated by compounds with estrogenic or anti-estrogene activity.

5 7. The vaccine of claim 1, wherein the gene construct or the polynucleotide is suitable for transfer into mammalian cells.

8. The vaccine of claim 7, wherein the gene construct or the polynucleotide comprises a viral vector.

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9. The vaccine of claim 7, wherein the gene construct or the polynucleotide comprises an adenoviral vector.

10. The vaccine of claim 1, wherein the expression can be switched on by  
15 chemical activation or by physical activation.

11. The vaccine of claim 1, wherein the expression can be switched on thermally or by irradiation.

20 12. The vaccine of claim 1, wherein the expression can be switched on by means of a regulatable promoter.

13. The vaccine of claim 1, wherein the expression can be switched on or off by an external stimulus.

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14. The vaccine of claim 1, wherein the expression can be switched on or off by a tetracycline.

15. The vaccine of claim 1, wherein the gene construct or polynucleotide  
5 and the antigen encoding gene are provided by means of separate vectors, a vector which provides all components, or as polycistronic expression units.

16. The vaccine of claim 15, wherein the gene construct or polynucleotide and the antigen encoding gene are provided as viral or bacterial carrier.

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17. A human antigen presenting cell (APC), wherein the cell has been subjected to gene transfer *ex vivo* with a gene construct or a polynucleotide as defined in claim 1 (feature (i)) and with genes as defined in claim 1 (feature (ii)).

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18. The human cell of claim 17, wherein the cell has been charged by physical transduction, chemical transduction, or viral transduction.

19. The human cell of claim 18, wherein the cell has been charged by electroporation.

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20. The human cell of claim 17, wherein the cell is an autologous cell or an allogenic cell.

21. The human cell of claim 17, wherein the cell is a tumor cell.

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22. The human cell of claim 21, wherein the cell is selected from the group consisting of carcinoma cells, sarcoma cells, and cells of tumors derived from the hematopoietic system.

5           23. The human cell of claim 22, wherein the cell is a hepatocellular carcinoma cell.

24. The human cell of claims 17 for the treatment, prevention, protective treatment and/or prophylactic immunization against tumoral, infectious and/or  
10 immune diseases.

25. The human cell of claim 17, wherein the active level of the member of the IRF family is higher than that of IRF-1 induced by interferon-gamma.

15           26. A method for the treatment, prevention, protective treatment and/or prophylactic immunization against tumoral, infectious and/or immune diseases comprising administering the vaccine of claim 1 to a mammal.

27. The method of claim 26, wherein the mammal is a human.

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28. A method for the treatment, prevention, protective treatment and/or prophylactic immunization against tumoral, infectious and/or immune diseases comprising administering the human cell of claim 17 to a mammal.

25           29. The method of claim 28, wherein the mammal is a human.